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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/821,245

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EXAMINER

FIDLER, SHELBY LEE

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/821,245

Applicant(s)

YOKOYAMA ET AL.

Examiner

Shelby Fidler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 113 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/9/2004.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 10 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Crosby et al. (US 6840617 B2).

Crosby et al. teaches the following:

***regarding claim 10**, a liquid ejecting apparatus for performing recording on a recording material by ejecting liquid onto the recording material, comprising:

a liquid ejecting head (*printheads 26 and 28, Figure 1*) reciprocating in a main scanning direction (*main scanning direction 42, Figure 1*) substantially crossing a feeding direction of the recording material (*sheet feed direction 54, Figure 1*);

a plurality of nozzle arrays (*elements 26a/b/c*) separately provided from each other in the feeding direction on a surface of the liquid ejecting head facing the recording material for ejecting liquid respectively (*elements 26a/b/c separated along sheet feed direction 54, Figure 2*); and

at least one support rib disposed to face areas between the main nozzle arrays via the recording material (*ribs 74 and 76 disposed between nozzle arrays 26a/b/c, Figure 2*);

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wherein a plurality of recess sections (*elements 62, 64, and 66, Figure 2*) are formed extending in the main scanning direction at positions facing the nozzle arrays via the recording material respectively (*col. 4, lines 18-30*) and dented to be lower than the support rib around the support rib (*base 58 is lower than partitions 74,76, Figure 2*)

***regarding claim 11**, at least one liquid absorption material disposed in the recess sections for absorbing liquid ejected from the nozzle arrays (*col. 4, lines 56-61*)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki (US 6746101 B2) in view of Kida et al. (US 6659603 B2).

Otsuki teaches the following:

***regarding claim 1**, a liquid ejecting apparatus for performing recording on a recording material conveyed to a liquid ejection area by ejecting liquid onto the recording material, comprising:

a plurality of first transfer rollers (*elements 25b or 25d, Figure 20*) separately provided from each other in a substantially same line along a main scanning direction crossing a feeding direction of the recording material (*elements 25 are separated along main scanning direction, Figure*

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20), for transferring the recording material in the feeding direction (*paper feed rollers, col. 12, lines 42-51*);

a plurality of first ribs (*upstream support 26sf, Figure 23*) disposed in the liquid ejection area for supporting the recording material on a surface of the recording material opposite the liquid ejection surface (*col. 3, lines 16-18*), directions and distances of the first ribs from the first transfer rollers in the feeding direction being substantially equal to each other (*ribs of support members 26sf/26sr are equally spaced from respective rollers 25b/25d, Figure 23*); and

a first liquid absorption material disposed between the first transfer rollers and the first ribs for absorbing the liquid (*col. 14, lines 15-19 with slot 26f, Figure 20*)

***regarding claim 2**, the first transfer rollers (*elements 25b*) convey the recording material to the liquid ejection area (*elements 25b feed according to arrow A, Figure 21*), and

the first ribs are disposed downstream of the feeding direction of the recording material against the first transfer rollers (*element 26sf downstream of elements 25b, Figure 23*)

***regarding claim 5**, the first transfer rollers convey the recording material out of the liquid ejection area (*elements 25d feed according to arrow A, Figure 21*), and

the first ribs are disposed upstream of the feeding direction of the recording material against the first transfer rollers (*element 26sr disposed upstream from elements 25d, Figure 23*)

Otsuki does not expressly teach the following:

***regarding claim 1**, transfer rollers bending the recording material inwards on a liquid ejection surface of the recording material in the liquid ejection area, and first ribs being placed at substantially same positions in the main scanning direction as first transfer rollers respectively

Kida et al. teaches the following:

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***regarding claim 1**, transfer rollers bending the recording material inwards on a liquid ejection surface of the recording material in the liquid ejection area (*col. 6, lines 24-26*), and ribs being placed at substantially same positions in the main scanning direction as first transfer rollers respectively (*ribs 17 are in-line with upstream driven rollers 9, Figure 5*)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Otsuki's invention to position the ribs at substantially same positions in the main scanning direction as transfer rollers. The motivation for doing so, as taught by Kida et al., is to effectively exert the cockling forces onto the ribs (*col. 6, lines 35-40*)

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki (US 6746101 B2) in view of Kida et al. (6659603 B2), as applied to claim 1 above, and further in view of Crosby et al. (US 6840617 B2)

Otsuki teaches the following:

***regarding claim 3**, a plurality of second transfer rollers (*elements 25d*) disposed downstream of the feeding direction of the recording material against the first liquid absorption material (*elements 25d downstream of slot 26f, Figure 21*), for conveying the recording material out of the liquid ejection area (*elements 25d convey according to arrow A, Figure 21*);

a plurality of second ribs (*element 26sr*) disposed in the liquid ejection area for supporting the recording material on the surface of the recording material opposite the liquid ejection surface (*col. 3, lines 16-18*), and being placed at substantially same positions between the second transfer rollers and the first ribs in the feeding direction (*ribs of support member 26sr are equally spaced from roller 25d, Figure 23*)

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***regarding claim 4**, the second ribs are arranged at substantially same positions in main scanning direction as the first ribs respectively (*ribs of elements 26sf and 26sr are arranged at same positions in main scanning direction, Figure 23*)

Otsuki does not expressly teach the following:

***regarding claim 3**, transfer rollers bending the recording material inwards on a liquid ejection surface of the recording material in the liquid ejection area;

second ribs being placed at substantially same positions in the main scanning direction as the second transfer rollers respectively; and

a second liquid absorption material disposed between the second transfer rollers and the second ribs for absorbing the liquid

***regarding claim 4**, the first and second transfer rollers are arranged at substantially same positions in main scanning direction as the first and second ribs, respectively

Kida et al. teaches the following:

***regarding claim 3**, transfer rollers bending the recording material inwards on a liquid ejection surface of the recording material in the liquid ejection area (*col. 6, lines 24-26*), and ribs being placed at substantially same positions in the main scanning direction as the second transfer rollers respectively (*ribs 17 are in-line with downstream exhaust rollers 12, Figure 5*)

***regarding claim 4**, the first and second transfer rollers are arranged at substantially same positions in main scanning direction as the first and second ribs, respectively (*ribs 17 are in-line with both upstream driven rollers 9 and downstream exhaust rollers 12, Figure 5*)

Crosby et al. teaches the following:

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***regarding claim 3**, a second liquid absorption material (element 82) disposed between the second transfer rollers and the second ribs for absorbing the liquid (*element 66, Figure 2 with col. 4, lines 56-61*)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Otsuki's invention with Crosby et al.'s absorbing material location. The motivation for doing so, as taught by Crosby et al., is to dispose absorbing materials in line with printhead nozzle arrays (*col. 4, lines 18-30*)

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby et al. (US 6840617 B2) in view of Meyer (6239817 B1), and further in view of Meyer et al. (US 5276467).

Crosby et al. teaches the following:

***regarding claim 6**, a liquid ejecting apparatus for performing recording on a recording material by ejecting liquid onto the recording material, comprising:

a liquid ejecting head (*printheads 26 and 28, Figure 1*) reciprocating in a main scanning direction (*main scanning direction 42, Figure 1*) substantially crossing a feeding direction of the recording material (*sheet feed direction 54, Figure 1*);

a plurality of main nozzle arrays (*elements 26a/b/c*) separately provided from each other in the feeding direction on a surface of the liquid ejecting head (*elements 26a/b/c separated along feeding direction, Figure 2*) facing the recording material for ejecting different main liquid respectively (*col. 4, lines 18-30*);

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a sub-nozzle array (*stacked nozzle array printhead 28, col. 2, lines 29-30*) provided on the surface of the liquid ejecting head facing the recording material for ejecting sub-liquid (*nozzle arrays face medium, Figure 2; ex. elements 26a/b/c*);

at least one support rib (*elements 74 and 76*) disposed to face areas between the main nozzle arrays via the recording material (*elements 74 and 76 aligned between nozzle arrays 26a/b/c, Figure 2*) for supporting the recording material (*col. 2, lines 35-37*)

***regarding claim 7**, the liquid ejecting head further comprises a downstream sub-nozzle array (*that provided by printhead 28, Figure 1*) for ejecting the sub-liquid (*black ink, col. 3, line 28*) onto an area different from that of the main liquid (*by having a black ink printhead, black ink is inherently printed onto an area different from color ink*); and

using the downstream sub-nozzle array when sub-liquid is ejected, in case only the sub-liquid is ejected onto the recording material without ejection of the main liquid (*sub-liquid is inherently ejected without the main liquid, because color inks would not be ejected during the ejection of black ink when the black ink is ejected onto a different area*)

Crosby et al. does not expressly teach:

***regarding claim 6**, an upstream sub-nozzle array provided on the surface of the liquid ejecting head facing the recording material for ejecting sub-liquid onto an area different from that of the main liquid, the upstream sub-nozzle array being disposed at a substantially same position in the feeding direction as one of the main nozzle arrays positioned most upstream of the feeding direction; and

a control unit for controlling the sub-liquid to be ejected from the upstream sub-nozzle array, when the main and sub-liquid is ejected onto an upper end of the recording material

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***regarding claim 7**, the control unit uses the upstream sub-nozzle array when the sub-liquid is ejected onto the upper end of the recording material, whereas using the downstream sub-nozzle array when the sub-liquid is ejected onto a lower end of the recording material
Meyer et al. teaches the following:

***regarding claim 6**, an upstream sub-nozzle array (*nozzle vernier pattern at upper right, Figure 13*) being disposed at a substantially same position in the feeding direction as one of the main nozzle arrays positioned most upstream of the feeding direction (*nozzle vernier pattern at upper right is positioned along the same line as nozzle vernier pattern at bottom right, Figure 13*)

***regarding claim 7**, the downstream sub-nozzle array (*nozzle vernier pattern at upper left, Figure 13*) is provided at a substantially same position in the feeding direction as one of the main nozzle arrays positioned most downstream of the feeding direction (*nozzle vernier pattern at upper left is positioned along the same line as nozzle vernier pattern at bottom left, Figure 13*)

***regarding claim 8**, an auxiliary sub-nozzle array () disposed between the upstream and downstream sub-nozzle arrays in the feeding direction ()

Meyer teaches the following:

***regarding claim 6**, a control unit (*controller 66*) for controlling the sub-liquid to be ejected from the upstream sub-nozzle array when the main and sub-liquid is ejected onto an upper end of the recording material (*col. 3, lines 27-33*)

***regarding claim 7**, the control unit (*controller 66*) uses the upstream sub-nozzle array when the sub-liquid is ejected onto the upper end of the recording material (*col. 3, lines 27-33 with printheads use upstream portion to eject on upstream edge of medium, Figure 4A*), whereas using the downstream sub-nozzle array when the sub-liquid is ejected onto a lower end of the

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recording material (*col. 3, lines 27-33 with printheads using the upstream portion to eject on downstream edge of medium, Figure 4C*)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the nozzle configuration of Crosby et al.'s printhead to have nozzle arrays in the same line. The motivation for doing so, as taught by Crosby, is to ensure that ejected ink, not landing on the printing material, is ejected into a trough (*col. 4, lines 18-30*)

At the time of invention, it would have been further obvious to a person of ordinary skill in the art to modify Crosby's invention with Meyer's control system. The motivation for doing so, as taught by Meyer, is to spray ink up to the edge of the recording material (*col. 4, lines 36-40*)

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby et al. (US 6840617 B2) in view of Meyer (6239817 B1), and further in view of Meyer et al. (US 5276467), as applied to claim 7 above, and further in view of Otsuki (US 6746101 B2).

Crosby et al., Meyer, and Meyer et al. teach all claimed limitations except for the following:

***regarding claim 8, an auxiliary sub-nozzle array disposed between the upstream and downstream sub-nozzle arrays in the feeding direction,**

wherein the control unit uses the upstream, downstream, and auxiliary sub-nozzle arrays when the sub-liquid is ejected onto an area except the upper and lower ends of the recording material

Otsuki teaches the following:

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***regarding claim 8**, control unit uses the upstream, downstream, and auxiliary sub-nozzle arrays when the sub-liquid is ejected onto an area except the upper and lower ends of the recording material (*Figure 17 shows that each printhead unit is used to record the printable area*)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Crosby et al.'s invention to use the upstream, downstream, and auxiliary sub-nozzle arrays to eject liquid onto an area except the upper and lower ends. The motivation for doing so, is to increase the speed of printing.

Claim 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby et al. (US 6840617 B2) in view of Meyer (6239817 B1), and further in view of Meyer et al. (US 5276467), as applied to claim 6 above, and further in view of Matsushashi (US 5997129).

Crosby et al. teaches the following:

***regarding claim 9**, the liquid ejecting apparatus is an inkjet type recording apparatus (*printer 10, Figure 1*);

the liquid ejecting head ejects ink of a plurality of colors except black (*printhead 26 ejects cyan, magenta, and yellow, col. 4, lines 18-30*), and ejecting black ink from the sub-nozzle arrays (*col. 3, lines 25-29*)

Crosby et al., Meyer, and Meyer et al. do not expressly teach the following:

***regarding claim 9**, the liquid ejecting head ejects ink of a plurality of colors except black for color recording from the plurality of main nozzle arrays, whereas ejecting black ink from the sub-nozzle arrays

Matsushashi teaches the following:

***regarding claim 9**, the liquid ejecting head ejects ink of a plurality of colors except black for color recording from the plurality of main nozzle arrays (*col. 7, lines 25-27*)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Crosby et al.'s invention to print without black during color recording. The motivation for doing so, is to preserve the black ink for monochrome printing.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby et al. (US 6840617 B2) in view of Kida et al. (US 6659603 B2).

Crosby et al. teaches a the following:

***regarding claim 12**, a plurality of first ribs (*element 74, Figure 2 with col. 5, lines 9-11*);
a plurality of second ribs (*element 76 with col. 5, lines 9-11*)

Crosby et al. does not expressly teach the following:

***regarding claim 12**, a plurality of first transfer rollers separately provided from each other in an approximately same line along the main scanning direction, for transferring the recording material in the feeding direction while bending the recording material inwards on a liquid ejection surface of the recording material at a position facing the liquid ejecting head; and

a plurality of second transfer rollers disposed downstream of the feeding direction against the support rib, for conveying the recording material out of the position facing the liquid ejecting head while bending the recording material inwards on the liquid ejecting surface at the position facing the liquid ejecting head,

the first ribs placed at substantially same positions in the main scanning direction as the first transfer rollers respectively, directions and distances of the first ribs from the first transfer rollers in the feeding direction being substantially equal to each other; and

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a plurality of second ribs placed at substantially same positions in the main scanning direction as the second transfer rollers respectively, and being placed at substantially same positions between the second transfer rollers and the first ribs in the feeding direction

Kida et al. teaches the following:

***regarding claim 12,** a plurality of first transfer rollers (*elements 9*) separately provided from each other in an approximately same line along the main scanning direction (*elements 9 disposed along same line, Figure 2*), for transferring the recording material in the feeding direction while bending the recording material inwards on a liquid ejection surface of the recording material at a position facing the liquid ejecting head (*element 7 is bent inwards multiple times, forming a wave, Figure 4*); and

a plurality of second transfer rollers (*elements 14*) disposed downstream of the feeding direction against the support rib (*elements 14 located downstream of ribs 17, Figure 2*), for conveying the recording material out of the position facing the liquid ejecting head while bending the recording material inwards on the liquid ejecting surface at the position facing the liquid ejecting head (*element 7 is bent inwards at multiple locations, forming a wave, Figure 4*),

the first ribs placed at substantially same positions in the main scanning direction as the first transfer rollers respectively (*ribs 17 are aligned with first rollers 9, Figure 5*), directions and distances of the first ribs from the first transfer rollers in the feeding direction being substantially equal to each other (*each rib is equally spaced from its respective roller, Figure 5*); and

the second ribs placed at substantially same positions in the main scanning direction as the second transfer rollers respectively (*ribs 17 are aligned with first rollers 14, Figure 5*), and being placed at substantially same positions between the second transfer rollers and the first ribs in the feeding direction (*each rib is equally spaced from its respective roller, Figure 5*)

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby et al. (US 6840617 B2) in view of Meyer (US 6239817 B1).

Crosby et al. teaches the following:

***regarding claim 13**, a control unit for controlling the nozzle arrays (*controller 18, Figure 1*), wherein the plurality of nozzle arrays comprises:

an upstream nozzle array (*element 26a*); and

a downstream nozzle array (*element 26c*) disposed downstream of the feeding direction against the upstream nozzle array (*element 26c is disposed downstream of element 26a, Figure 2*)

Crosby et al. does not expressly teach:

***regarding claim 13**, the control unit uses the upstream nozzle array when the liquid is ejected onto an upper end of the recording material, whereas using the downstream nozzle array when the liquid is ejected onto a lower end of the recording material

Meyer teaches the following:

***regarding claim 13**, the control unit uses the upstream nozzle array when the liquid is ejected onto an upper end of the recording material (*printhead 27 uses upstream portion to eject on edge 42 of medium*), whereas using the downstream nozzle array when the liquid is ejected onto a lower end of the recording material (*printhead 27 uses downstream portion to eject on edge 48 of medium*)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Crosby's invention with Meyer's control system. The motivation for doing so, as taught by Meyer, is to spray ink up to the edge of the recording material (*col. 4, lines 36-40*)

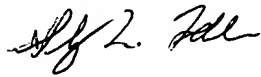
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Communication with the USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelby Fidler whose telephone number is (571) 272-8455. The examiner can normally be reached on MWF 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SLF


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PRIMARY EXAMINER